



#13  
PATENT  
29250-000141

**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

APPELLANTS: Terry Si-Fong CHENG et al.

SERIAL NO.: 09/163,396

GROUP: 2744

FILED: September 30, 1998

EXAMINER: Stella Woo

TITLE: CDMA POWER CONTROL FOR PAGING AND INITIAL TRAFFIC CHANNEL

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**APPEAL BRIEF**

Assistant Commissioner of Patents  
Washington, D.C. 20231

November 13, 2001

Sir:

Appellants submit herewith a Brief on Appeal in triplicate as required by 37 C.F.R. § 1.192. This Brief on Appeal responds to the Final Office Action dated March 13, 2001 in the above-referenced application.

I. REAL PARTY IN INTEREST

The real party in interest is the assignee of record, which is LUCENT TECHNOLOGIES, INC., a corporation of the United States of America, as recorded on October 25, 1999 at reel 010331, frame 0386.

01/30/2002 SLUAF51 00000045 122325 09163396  
02 FC:120 320.00 CH

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants which will directly affect or have a bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

Claims 1-26 remain pending in this application. These claims are reproduced in the attached Appendix.

Claims 1-26 stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ohtake (U.S. Patent No. 5,487,180) in view of Shen et al. (U.S. Patent No. 6,118,767).

This rejection is being appealed.

IV. STATUS OF AMENDMENTS

A response under Rule 116 was filed subsequent to the Final Office Action dated March 13, 2001. The response under Rule 116 was a Request for Reconsideration, which was entered into the Official Record on September 5, 2001. The indication of entry was provided via an Advisory Action dated September 5, 2001.

V. SUMMARY OF THE INVENTION

The present invention relates to CDMA power control for dynamically determining optimum paging and initial traffic channel power to reduce call origination failure in a mobile communications system. The inventive system according to one embodiment, includes at least one base station 30 in communication with a mobile station 10. Further, the embodiment includes a

mobile switching center 40 that is coupled to the base station 30 via communication lines L, and is further coupled to a public switched telephone network (PSTN) 50 to enable communication between the mobile station 10 and another party on the PSTN 50. See Fig. 1 and lines 22-27, page 3; and lines 1-3, page 4.

The base station 30 indicated hereinabove includes a controller 305. The controller 305 may be a microprocessor or the like, which controls operation of the base station 30 in accordance with software programming stored in a memory 307. See Fig. 2 and lines 21-27, page 4.

Operationally, and in accordance with the described embodiment of the present invention, the mobile station 10 first locks onto a strongest pilot signal and generates a pilot measurement message (PSMM), which identifies the received pilot signal and the pilot signal strength  $\left(\frac{Ec}{Io}\right)$ . In particular, upon locking onto a pilot signal from the base station 30, the mobile station 10 transmits the PSMM to the base station 30. The controller 305 of the base station 230 then determines an optimum paging channel power and initial traffic channel power, in accordance with the software programming stored in the memory 307, based on the reported pilot signal strength and current forward link loading. (Please refer to lines 1-8, page 6.)

In another embodiment of the present invention, optimum paging channel power may be determined by a controller 403 of a mobile switching center 40 in accordance with software stored in a memory 45 (Fig. 3). In this embodiment, the PSMM is generated by the mobile station 10 and transmitted to the base station 30. Subsequently, the base station 30 sends the PSMM to the mobile switching center 40 via lines L. A controller 403 then determines the required transmitted paging channel power for the base station 30 based upon the PSMM and current forward link loading of

the base station 30 as determined based on a reported pilot signal strength. (Please refer to the first discussed embodiment). The controller 403 then directs a transceiver 401 to send information indicative of the required transmitted paging channel power to the base station 30, which thereafter transmits a paging message to the mobile station 10 over a paging channel at the required transmitted paging channel power. (Please see lines 3-13, page 9.)

The notations to the figures and specification pages above was done to comply with the brief requirements of the U.S. Patent and Trademark Office, and are not to be considered as limiting the claims.

VI. ISSUES PRESENTED FOR REVIEW:

- A. Whether a *prima facie* case of obviousness under 35 U.S.C. § 103 has been established by the Examiner for any of claims 1-26.
  - 1. Whether the references relied upon by the Examiner, in combination, teach or suggest the limitations of the rejected claims.
  - 2. Whether a suggestion or motivation to combine has been shown in the references themselves.
  - 3. Whether a suggestion or motivation to combine has been shown in the knowledge available to one of ordinary skill in the art.
  - 4. Whether the Examiner has used improper hindsight reconstruction in determining the obviousness of the rejected claims.

VII. GROUPING OF CLAIMS:

Claims 1-26 stand or fall together.

VIII. ARGUMENT:

Claim recitation.

Claims 1, 5, 10, 16, 20 and 24 are each independent. Each of the independent claims substantially sets forth determining optimum paging channel power in accordance with a pilot signal strength of a pilot signal. For the exact recitation of the independent claims, the Appellants respectfully request that the Board refer to the Appendix hereof. With regard to dependent claims 2-4, 6-9, 11-15, 17-19, 21-23 and 25-26, Appellants respectfully submit that these claims are allowable by virtue of their dependence upon a novel independent claim. Moreover, Appellants respectfully submit that the additional limitations set forth by the dependent claims further define the present invention over the patent documents relied upon by the Examiner.

A. A *prima facie* case of obviousness has not been established for any of claims 1-26.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

The Examiner bears the burden of establishing a *prima facie* case of obviousness.... Only if this burden is met does the burden of coming forward with rebuttal argument or evidence shift to the applicant.... When the references cited by the examiner fail to establish a *prima facie* case of obviousness, the rejection is improper and will be overturned. *In re Deuel*, 34 USPQ 2d 1210, 1214 (Fed. Cir. 1995).

The Federal Circuit in *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) stated that in order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. The U.S. Court of Appeals for the Federal Circuit has consistently required that evidence of such suggestion or motivation be provided to establish a *prima facie* case.

An essential evidentiary component of an obviousness rejection is a teaching or suggestion or motivation to combine the prior art references. *C.R. Bard, Inc. v. M3 Systems, Inc.*, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). An Examiner can satisfy the burden of obviousness in light of a combination only by showing some objective teaching leading to the combination. *In re Fritch*, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). Evidence of a suggestion, teaching or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or in some cases, from the nature of the problem solved. *Dembiczak*, 50 USPQ2d at 1617. However, "the suggestion more often comes from the teachings of the pertinent references." *In re Rouffet*, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

Further, the Federal Circuit has admonished that "[b]road conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence.'" *Dembiczak*, 50 USPQ2d at 1617.

Moreover, the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Fritch*, 23 USPQ 2d 1780, 1783-84 (Fed. Cir. 1992).

Determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameter of the patented invention. There must be a teaching or suggestion within the prior art, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources of information, to select particular elements, and to combine them in the way they were combined by the inventor. *ATD Corp. v. Lydall, Inc.*, 48 USPQ 2d 1321, 1329 (Fed. Cir. 1998).

The CAFC has stated that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. *In re Dembiczak*, 50 USPQ2d 1614 (Fed. Cir. 1999).

1. The combination of references by the Examiner do not teach or suggest each and every limitation of the rejected claims.

It is the Examiner's position that,

Ohtake teaches the concept of using a first channel to determine optimum transmission power level of the second channel from the base station (A, fig. 12A) to the mobile station (A, fig. 12A), based on the power measurement results at the mobile station of the first channel.

See Office Action dated March 13, 2001, page 6, lines 5-8.

The Examiner's position is based on an overly broad reading of Ohtake and lacks support in the reference. Ohtake discloses a method of determining initial transmission power including measuring the reception level of a down control channel from a base station and determining the initial transmission power value of a down talk channel of a base station based on the reception level of the down control channel. See col. 9, lines 54-58. Ohtake does not disclose applying these principles to any other type of signal/channel in the wireless transmission system.

Due to the limited scope of the disclosure of Ohtake, Ohtake does not teach all of the features of independent claims 1, 5, 10, 16, 20 and 24, particularly with respect to the method, controller or paging channel source code segment for determining optimum paging channel power in accordance with a pilot signal strength of a pilot signal wirelessly received by the mobile station.

The Examiner relies on Shen et al. to make up for the deficiencies of Ohtake. It is the Examiner's position that Shen et al. teach the need for power control of all channels, which implies paging channels, traffic channels, etc. in a CDMA environment to minimize interference in a CDMA communication system to maintain optimum capacity of a CDMA system. See Office Action on page 6, lines 11-15.

While Shen et al. disclose controlling interference in CDMA networks, Shen et al. discuss nothing regarding determining an optimum paging channel power based on a pilot signal strength of a pilot signal received by a mobile station. Thus, Shen et al. do not make up for the deficiencies of Ohtake. Therefore the Examiner has failed to provide a *prima facie* case of obviousness in relying upon Ohtake and Shen et al. in combination together.

In addition to the above, Appellants respectfully submit that the specific textual segments relied upon by the Examiner in the Shen et al. reference merely relate to the known necessity to control power in a CDMA network. The textual portions of the Shen et al. reference relied upon by the Examiner to combine with Ohtake are column 1, lines 54-56; column 2, lines 56-67; and column 3, lines 59-61.

The first cited portion of Shen et al. indicates that "the mobile units are typically power controlled to reduce energy transmitted within the CDMA frequency band while maintaining sufficient power to provide an acceptable signal at a receiving unit." In addition, this cited portion



indicates that by way of “intelligent power control, the signals from all the communication units may be adjusted to arrive at a receiver with substantially the same signal to interference ratio.”

Now, turning to the second cited portion of Shen et al. relied upon by the Examiner (column 2), as is indicated therein, the Shen et al. invention “operates to mitigate interference by adjusting attributes of signals of the antenna beam(s) determined to contain external or inordinate interference.” Finally, the last cited portion of the Shen et al. reference relied upon by the Examiner (column 3) indicates the patented invention achieves “mitigation of the effects of undesired energy in a CDMA receiver site.” Appellants respectfully submit that the above indicated portions of the Shen et al. reference are nothing more than a discussion of what is currently required in CDMA systems.

In particular, because CDMA is an interference-limited system, the transmit power from each mobile must be controlled to limit interference. However, this limiting of interference refers directly to the traffic channels of a CDMA system (emphasis added). In other words, to the channels that directly disseminate speech or data. However, because the instant claimed invention relates to determining an optimum paging channel power based on a pilot signal strength of a pilot signal received by a mobile station, Appellants respectfully submit that the current known power control requirements for a CDMA system do not apply to the instant claimed invention.

In particular, as is well known, paging channels in a CDMA system relate exclusively to downlink control channels. These paging channels are used to transmit control information to individual mobile stations. When a mobile station is to receive a call, it will receive a page from the base station on an assigned paging channel. The paging channel provides the mobile station with system information and instructions, in addition to acknowledging messages following access

requests on the mobile station's access channels. Although paging channels are processed in a manner similar to the processing of traffic channels, or as referred to in the Ohtake reference as talk channels, known CDMA systems do not address the need for determining an optimum paging channel power (emphasis added). The Appellants recognize the need for determining optimum paging channel power, and invented a novel process, apparatus and system for accomplishing such by way of using a pilot signal strength of a pilot signal received by a mobile station. There is simply no teaching or suggestion in either Ohtake or Shen et al. that indicates such would be desirable.

In accordance with the above, Appellants respectfully submit that the Examiner failed to establish a *prima facie* case of obviousness, and therefore the rejection of claims 1-26 should be reversed.

2. No suggestion or motivation to combine has been shown in the references themselves.

The Examiner maintains "it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ohtake's system to provide for transmission of page at the optimum paging channel power as this would provide the benefits of using minimum possible power for signaling between the base station and mobile station, thus contributing to the reduction in interference power in the system and also maintain [sic] a reasonable capacity in the mobile system as taught by Shen," see Final Office Action, paper 8, page 3, third full paragraph. Besides the fact that Shen et al. fail to teach or suggest determining an optimum paging channel power in accordance with a pilot signal strength of the pilot signal, Appellants respectfully submit that because the specific portions of the Shen et al. reference relied upon by the Examiner merely refer

to the known desirability to maintain a reasonable power level of the voice and data transmissions of a CDMA system, it is clear that the relied upon references do not provide a suggestion or motivation to combine the teachings thereof with Ohtake. Therefore, because, as is indicated in *Dembiczak*, there must be some suggestion or motivation, either in the references themselves or the knowledge generally available to one of ordinary skill in the art to combine reference teachings, Appellants respectfully submit that the combination of Ohtake and Shen et al. is improper inasmuch as neither of the references disclose a suggestion or motivation to combine (emphasis added). Accordingly, a proper *prima facie* case of obviousness has not been made out.

3. No suggestion or motivation to combine has been shown in the knowledge available to one of ordinary skill in the art.

As suggested in *Dembiczak*, another source for suggestion, teaching, or motivation could be the knowledge of one of ordinary skill in the art (emphasis added). Regardless of the source, the Examiner is still required to provide actual evidence. In particular, the showing must be clear and particular. Broad conclusory statements regarding the teaching of multiple references, standing alone are not evidence. *Dembiczak* at 1617.

As is indicated hereinabove, the knowledge used by the Examiner to combine the Ohtake and Shen et al. references relates specifically to the need known in conventional CDMA systems to control power levels of multiple data signals. However, as has been indicated, Appellants respectfully submit the need for determining an optimum paging channel power in accordance with the pilot signal strength of the pilot signal was unknown prior to the Appellants' claimed invention. Therefore, because the desirability to determine an optimum paging channel power in

accordance with the pilot signal strength of the pilot signal was unknown by those of ordinary skill in the art before the instant claimed invention, Appellants respectfully submit that the Examiner's suggestion or motivation to combine the two relied upon references is insufficient to establish a proper *prima facie* case of obviousness.

4. The Examiner has used hindsight reconstruction to come to the conclusion the rejected claims are obvious.

The lacking of a suitable suggestion or motivation to combine the Ohtake and Shen et al. patent documents, provides evidentiary support that the Examiner relied upon impermissible hindsight knowledge of the instant claimed invention in coming to the determination that the relied upon references teach or suggest the instant claimed invention. Of course, as stated in *Dembiczak*, the best offense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for showing of a teaching or motivation to combine the prior art references. Appellants have shown hereinabove that both the teaching and/or motivation to combine the relied upon references are lacking. Accordingly, Appellants extrapolate from this that the Examiner used impermissible hindsight knowledge of the instant claimed invention when determining to combine the relied upon references.

IX. CONCLUSION

For the reasons set forth above, each of the rejections in the Final Office Action dated March 13, 2001 is improper. It is therefore respectfully requested that the Examiner be reversed on all grounds.

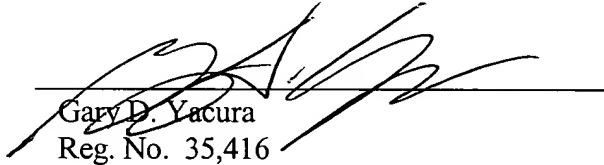
Should there be any outstanding matters which need to be resolved in the present application, the Board is respectfully requested to contact Timothy R. Wyckoff, Registration No. 46,175 at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit of any overpayment to Deposit Account No.12-2325 for any additional fees required by 37 C.F.R. §1.16 or under 37 C.F.R. §1.17; particularly, extension of time fees.

Respectfully submitted,

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X. APPENDIX

IN THE CLAIMS

1. A base station of a mobile communication system comprising:  
a transmitter that wirelessly transmits a pilot signal and a paging message to a mobile station of the mobile communication system; and  
a controller that determines optimum paging channel power in accordance with pilot signal strength of the pilot signal wirelessly received by the mobile station,  
said transmitter wirelessly transmitting the paging message to the mobile station over a paging channel at the optimum paging channel power.
2. The base station of claim 1, wherein said controller determines optimum paging channel power in accordance with the pilot signal strength and forward loading of the base station,  
the forward loading of the base station being a ratio of current transmitted power of the base station to maximum transmitted power of the base station .
3. The base station of claim 1, wherein said controller also determines an optimum initial traffic channel power in accordance with the pilot signal strength.
4. The base station of claim 1, wherein the mobile communication system is CDMA mobile communication system.
5. A mobile switching center of a mobile communication system, the mobile switching center being supplied with indication of pilot signal strength of a pilot signal received wirelessly by a mobile station of the mobile communication system, the mobile switching center comprising:  
a controller that determines optimum paging channel power for wireless transmission of a paging message to the mobile station in accordance with the pilot signal strength of the pilot signal.
6. The mobile switching center of claim 5, wherein said controller supplies information indicative of the optimum paging channel power to a base station of the mobile communication

system, the paging message being wirelessly transmitted from the base station to the mobile station at the optimum paging channel power.

7. The mobile switching center of claim 6, wherein said controller determines the optimum paging channel power in accordance with the pilot signal strength and forward loading of the base station,

the forward loading of the base station being a ratio of current transmitted power of the base station to maximum transmitted power of the base station.

8. The mobile switching center of claim 5, wherein said controller also determines an optimum initial traffic channel power in accordance with the pilot signal strength.

9. The mobile switching center of claim 5, wherein the mobile communication system is a CDMA mobile communication system.

10. A method of controlling transmission power of a base station of a mobile communication system comprising the steps of:

wirelessly transmitting a pilot signal to a mobile station of the mobile communication system;

determining optimum paging channel power in accordance with pilot signal strength of the pilot signal wirelessly received by the mobile station; and

wirelessly transmitting a paging message to the mobile station over a paging channel at the optimum paging channel power.

11. The method of controlling transmission power of claim 10, wherein said step of determining comprises determining optimum paging channel power in accordance with the pilot signal strength and forward loading of the base station,

the forward loading of the base station being a ratio of current transmitted power of the base station to maximum transmitted power of the base station.

12. The method of controlling transmission power of claim 10, wherein the base station determines the optimum paging channel power.

13. The method of controlling transmission power of claim 10, wherein a mobile switching center of the mobile communication system determines the optimum paging channel power.

14. The method of controlling transmission power of claim 10, further comprising:  
determining optimum initial traffic channel power in accordance with the pilot signal strength; and  
wirelessly transmitting a call to the mobile station over a traffic channel at the optimum initial traffic channel power.

15. The method of controlling transmission power of claim 10, wherein the mobile communication system is a CDMA mobile communication system.

16. An article of manufacture taking the form of a computer-readable medium for controlling transmission power of a base station in a mobile communication system, the article of manufacture comprising:

a pilot transmission source code segment for causing a computer within the base station to wirelessly transmit a pilot signal to a mobile station of the mobile communication system;

a paging channel determination source code segment for causing the computer to determine an optimum paging channel power in accordance with pilot signal strength of the pilot signal wirelessly received by the mobile station; and

a paging transmission source code segment for causing the computer to wirelessly transmit a paging message to the mobile station over a paging channel at the optimum paging channel power.

17. The article of manufacture of claim 16, wherein said paging channel determination source code segment causes the computer to determine the optimum paging channel power in accordance with the pilot signal strength and forward loading of the base station,



the forward loading of the base station being a ratio of current transmitted power of the base station to maximum transmitted power of the base station.

18. The article of manufacture of claim 16, further comprising:  
a traffic channel determination source code segment for causing the computer to determine an optimum initial traffic channel power in accordance with the pilot signal strength; and  
a traffic channel transmission source code segment for causing the computer to wirelessly transmit a call to the mobile station over a traffic channel at the optimum initial traffic channel power.

19. The article of manufacture of claim 16, which controls transmission power of the base station in a CDMA mobile communication system.

20. An article of manufacture taking the form of a computer readable medium for controlling transmission power of a base station of a mobile communication system, the article of manufacture comprising:

a paging channel determination source code segment for causing a computer of a mobile switching center of the mobile communication system to determine optimum paging channel power in accordance with pilot signal strength of a pilot signal wirelessly received by a mobile station of the mobile communication system; and

a paging channel transmission source code segment for causing the computer to direct a base station to wirelessly transmit a paging message to the mobile station over a paging channel at the optimum paging channel power.

21. The article of manufacture of claim 20, wherein the paging channel determination source code segment causes the computer to determine the optimum paging channel power in accordance with the pilot signal strength and forwarding loading of the base station,

the forward loading of the base station being a ratio of current transmitted power of the base station to maximum transmitted power of the base station.

22. The article of manufacture of claim 20, further comprising:

a traffic channel determination source code segment for causing the computer to determine optimum initial traffic channel power in accordance with the pilot signal strength of the pilot signal; and

a traffic channel transmission source code segment for causing the computer to direct the base station to wirelessly transmit a call to the mobile station over a traffic channel at the optimum initial traffic channel power.

23. The article of manufacture of claim 20, which controls transmission power in a CDMA mobile communication system.

24. A propagated signal embodied in a carrier wave for controlling transmission power of a base station of a mobile communication system, the propagated signal comprising:

a pilot transmission source code segment for causing a computer within the base station to wirelessly transmit a pilot signal to a mobile station of the mobile communication system;

a paging channel determination source code segment for causing the computer to determine an optimum paging channel power in accordance with pilot signal strength of the pilot signal wirelessly received by the mobile station; and

a paging transmission source code segment for causing the computer to wirelessly transmit a paging message to the mobile station over a paging channel at the optimum paging channel power.

25. The propagated signal of claim 24, wherein said paging channel determination source code segment causes the computer to determine the optimum paging channel power in accordance with the pilot signal strength and forward loading of the base station,

the forward loading of the base station being a ratio of current transmitted power of the base station to maximum transmitted power of the base station.

26. The propagated signal of claim 24, further comprising:

a traffic channel determination source code segment for causing the computer to determine an optimum initial traffic channel power in accordance with the pilot signal strength; and

a traffic channel transmission source code segment for causing the computer to wirelessly transmit a call to the mobile station over a traffic channel at the optimum initial traffic channel power.